Pawtuckaway River
Lamprey River Watershed
New Hampshire

Dollof Dam - Break Flood Delineations

July 1990

US Army Corps
of Engineers
New England Division

DOLLOF DAM
DAM-BREAK FLOOD ANALYSIS

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1. PURPOSE AND SCOPE

This report is a continuation of a dam-break flood analysis, on Dollof Lake Dam, completed by the U.S. Army Corps of Engineers, dated September, 1984. The dam is located in Nottingham, New Hampshire. The study's objective is to delineate and quantify the extent of the probable inundation flood area in the event of a dam-break failure, and to make such information available for use in emergency planning. This study was not performed because of any known likelihood of a dam-break at Dollof Dam. This study is limited to the accuracy of ten-foot-contour mapping.

Delineations were continued downstream to a point at which the inundation from a dam-break approximates that of a one-hundred year storm event. The limits of this study are shown on Plate 2.

2. AUTHORITY

Authority for U.S. Army Corps of Engineers participation in this effort is sanctioned by Section 206 of the 1960 Flood Control Act (Public Law 86-645) which states:

"... The Secretary of the Army, through the Chief of Engineers, Department of the Army, is hereby authorized to compile and disseminate information on floods and flood damages, including identification of areas subject to inundation by floods of various magnitudes and frequencies, and general criteria for guidance in the use of floodplain areas and to provide engineering advice to local interests for their use in planning to ameliorate the flood hazard..."

3. DAM DESCRIPTION

Identification No.	NH00134
Name of Dam:	Dollof Dam
Town:	Nottingham
County and State:	Rockingham County, New Hampshire
Stream:	Tributary of Pawtuckaway River

Dollof Dam is located in Nottingham, New Hampshire (Plate 1), and is 27 feet high, 28 feet wide, and 414 feet long. It is an earthen embankment contained between vertical dry masonry (stone) walls. The downstream face has one berm. The upstream face and berm were reinforced with concrete in 1964. Appurtenant structures include: an uncontrolled spillway, a stoplog spillway, and a low-level gated outlet with a mechanical lifting mechanism. Dollof Dam, with Drown's Dam and Grove Dike, impound Pawtuckaway Pond. The pond now is used for recreation; it is three miles long, and has a 900 acre surface. Maximum storage is 11,700 acre-feet.

4. PERTINENT DATA

Data is taken from "Phase I Inspection Report" for Dollof Dam, dated July, 1978.

a. Drainage Area The drainage area consists of 20.66 square miles (13,225 acres) of predominantly wooded terrain.

b. Discharge at Damsite

(1) Outlet works (gated outlet) - 300 cfs at maximum pool elevation (252.7 feet NGVD).

(2) Ungated spillway capacity at maximum pool elevation - 690 cfs at elevation 252.7 feet NGVD.

(3) Stoplog spillway capacity at recreational pool elevation (250 feet NGVD) is estimated to be 1630 cfs (assuming removal of all stoplogs.)

(4) Stoplog spillway capacity at maximum pool elevation - 2210 cfs at elevation 252.7 feet NGVD.

(5) Total spillway capacity at maximum pool elevation - 2900 cfs at elevation 252.7 feet NGVD.

c. Elevation (feet NGVD).

(1)	Top of Dam:	252.7
(2)	Recreation pool:	250
(3)	Spillway crest (gated):	238 (assuming all stoplogs removed).
(4)	Upstream portal gated outlet:	237.2
(5)	Stream bed at centerline of dam (downstream toe)	235
(6)	Maximum tailwater:	Unknown

d. Reservoir (miles)

(1)	Length of maximum pool:	3.0
(2)	Length of recreational pool:	3.0

e. Storage (acre-feet).

(1)	Recreational pool:	11,500
(2)	Top of dam : (lowpoint of embankment)	11,700

f. Reservoir Surface (acres)

(1)	Top of dam:	985
(2)	Maximum pool:	975
(3)	Recreation pool:	903
(4)	Spillway crest:	210

g. Dam

(1)	Type:	earthen embankment with both upstream and downstream sides faced by nearly vertical dry masonry walls.
(2)	Length:	414 feet
(3)	Height:	27 feet (structural height)
(4)	Top width:	approximately 28 feet

h. Diversion and Regulating Tunnel: A slot through the dam, at the right one-third point, constructed with stone masonry forms the control shaft supporting the sluice gate. A four-foot-wide by seven-foot-high portal on the downstream side provides access to the sluice gate and shaft, and releases the sluice discharge water. A shaft approximately at the middle of the dam's cross-section, covered by a locked housing contains the lifting mechanism for a sluice gate which is estimated to be four feet wide by three feet high.

i. Spillway.

(1)	Type:	Ungated and stoplog.
(2)	Length of weir:	42 feet (ungated); 13 feet (stoplog)
(3)	Crest elevation:	250 feet NGVD (ungated); 238 feet NGVD (all stoplogs removed)
(4)	Gates:	none
(5)	U/S channel:	Pawtuckaway Pond

(6) Downstream channel:	The channels downstream of both the concrete overflow spillway and the stoplog spillway appear the be in bedrock. The bottom of the channel downstream of the gated low-level outlet is covered with rocks and it is not known whether the channel is immediately underlain by bedrock
(7) General:	4 foot wide concrete slab access bridges over each spillway.

5. DOWNSTREAM COMMUNITY INFORMATION

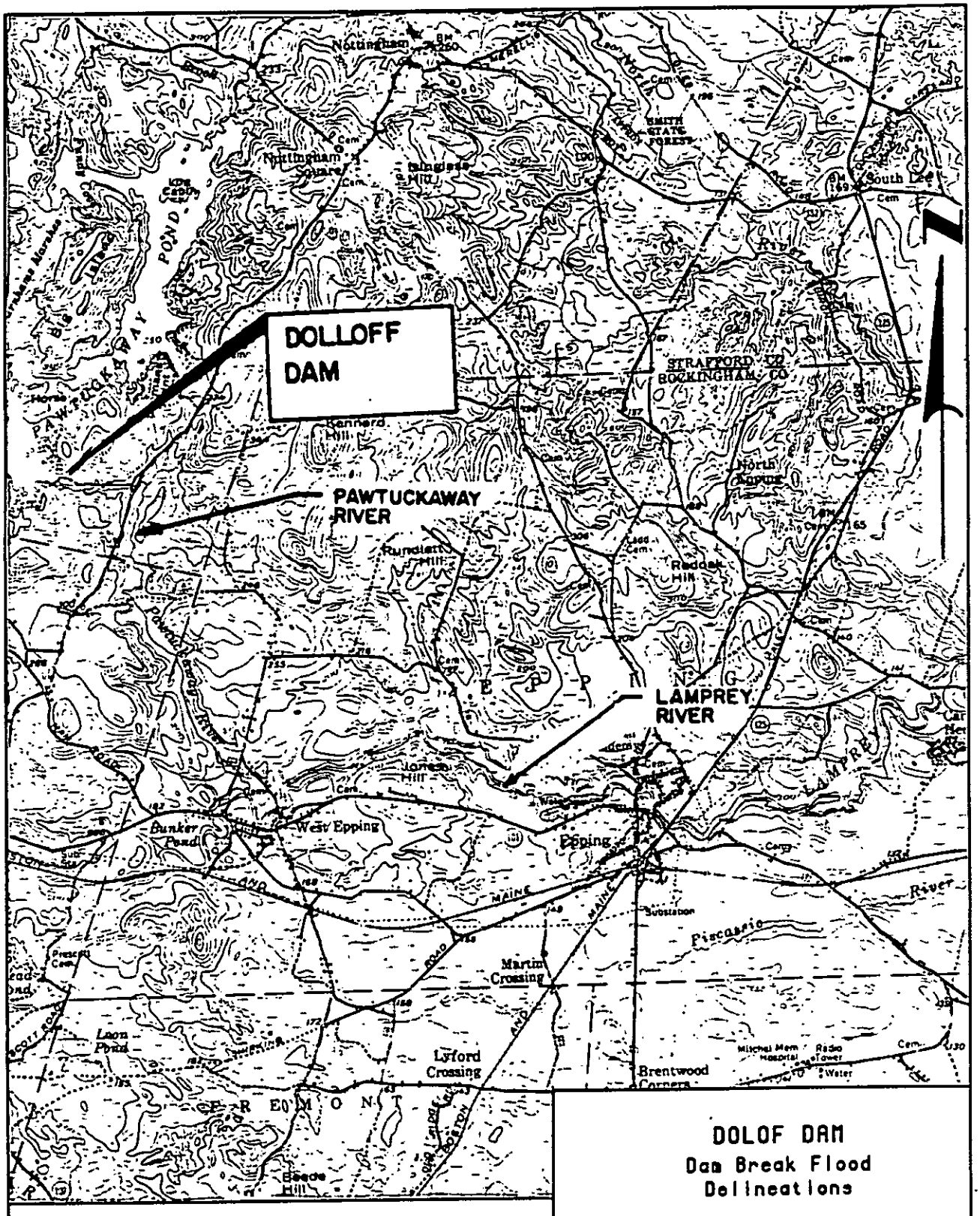
Dollof Dam is in the Town of Nottingham. Nottingham is located in Rockingham County, in southeastern New Hampshire. It is 18 miles from Exeter, and 22 miles from Portsmouth. Nottingham had a 1980 population of 1,952 persons, according to U.S. Census Bureau data, more than double that of 1970. Nottingham is a mostly residential community with some small businesses. Downstream of the Dollof Dam in Nottingham, is the Town of Epping (and West Epping). The 1980 population of Epping was 3,460 persons, about a 47 percent increase over the 1970 population.

6. DESCRIPTION OF INUNDATED AREAS

a. *REFERENCES.* The *inundation map for emergency action plan* (Plate 2) is developed from the September 1984, Dollof Dam-Break Flood Analysis, using an enlargement of the U.S.G.S. 7.5 minute (1 : 24000) Epping and Mt. Pawtuckaway Quadrangle maps, as revised in 1981.

b. DESCRIPTION OF IMPACTED AREA. Dollof Dam is located on Pawtuckaway Pond. It is accessible by Dollof Dam Road, off Route 156 (Raymond Road). The area below Dollof Dam is mostly wooded with about a dozen houses on Dollof Dam Road and Route 156. There is one bridge on Route 156 in Nottingham. Farther downstream the probable inundation area stretches into Epping and West Epping, where there are five more bridges, about a dozen homes, and a half dozen businesses.

The inundation area is rural and wooded, with steep slopes. There is no concentrated population area within the limits of the study which extend to Epping (see Plate 2). At the limits of study, just outside the inundation area are sewage disposal ponds.



MAP BASED UPON U.S.G.S
MT. PAWTUCKAWAY, N.H QUADRANGLE
1957 SCALE IN MILES

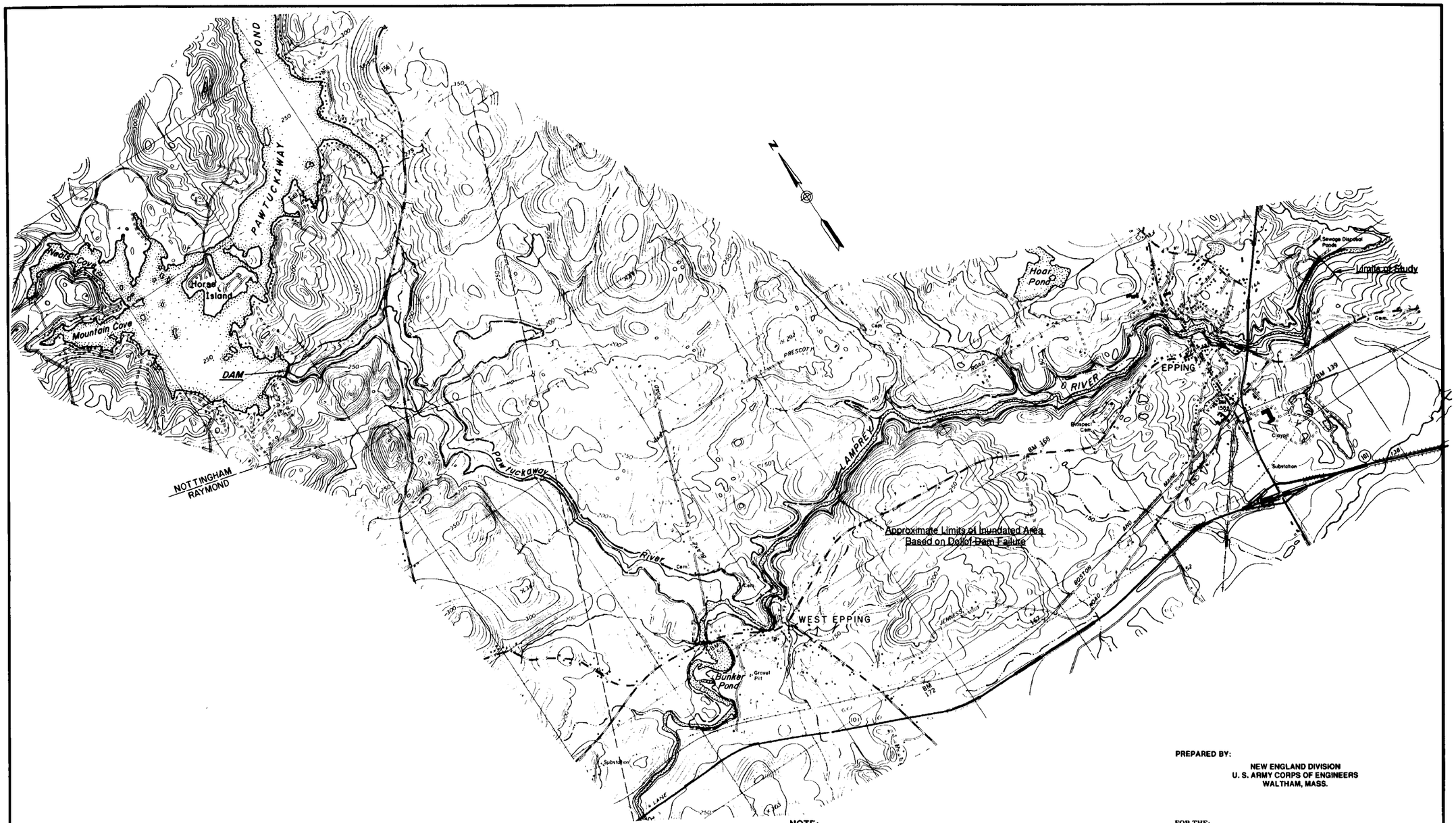
1 0 1

DOLOF DAM
Dam Break Flood
Delineations

Location Map

U.S. Army Corps of
Engineers

Plate 1



NOTE:

Mapping is a photograhic enlargement of the U. S. G. S. 7.5 minute (1:24,000) Epping and Mt. Pawtuckaway Quadrangle maps, as edited in 1981.

SCALE IN FEET
1000' 0 1000' 2000'

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INUNDATION MAP FOR EMERGENCY ACTION PLAN (EAP)

DOLLOF DAM
N. H. NO. 184.02

DEC. 1989

PLATE 2